EO/IR Payload Display

EO/IR Payload Display

- Function: Provide timely display of payload status data and payload controls in support of effective use of the payload in imagery collection
- Applicable CSCs:
  - EO/IR Imagery Viewer & Capture
  - EO/IR Payload Control
- CSCs are linked depending on role

Design Drivers

- Situational Awareness
- Object of Interest Recognition & Assessment
- Minimum imagery capture rate of once every 15 seconds
- Minimum translation/alteration of image data to preserve original for C4I systems

Design Approach

- Analyze roles - determine functionality required
- Collect suggestions and comments from operators at demos and AWEs
- Layout a display design
- Implement and take to demos and AWEs

Implementation Approach

- Draw video overlays (via standard windowing API) into Parallax HW memory
  - Create overlays at the workstation - avoid "burning" overlays into video
  - Overlays can be converted to CGM for NITF files - C4I user can view overlays as required
- Reformat data from Parallax HW only as much as required for NITF compatibility

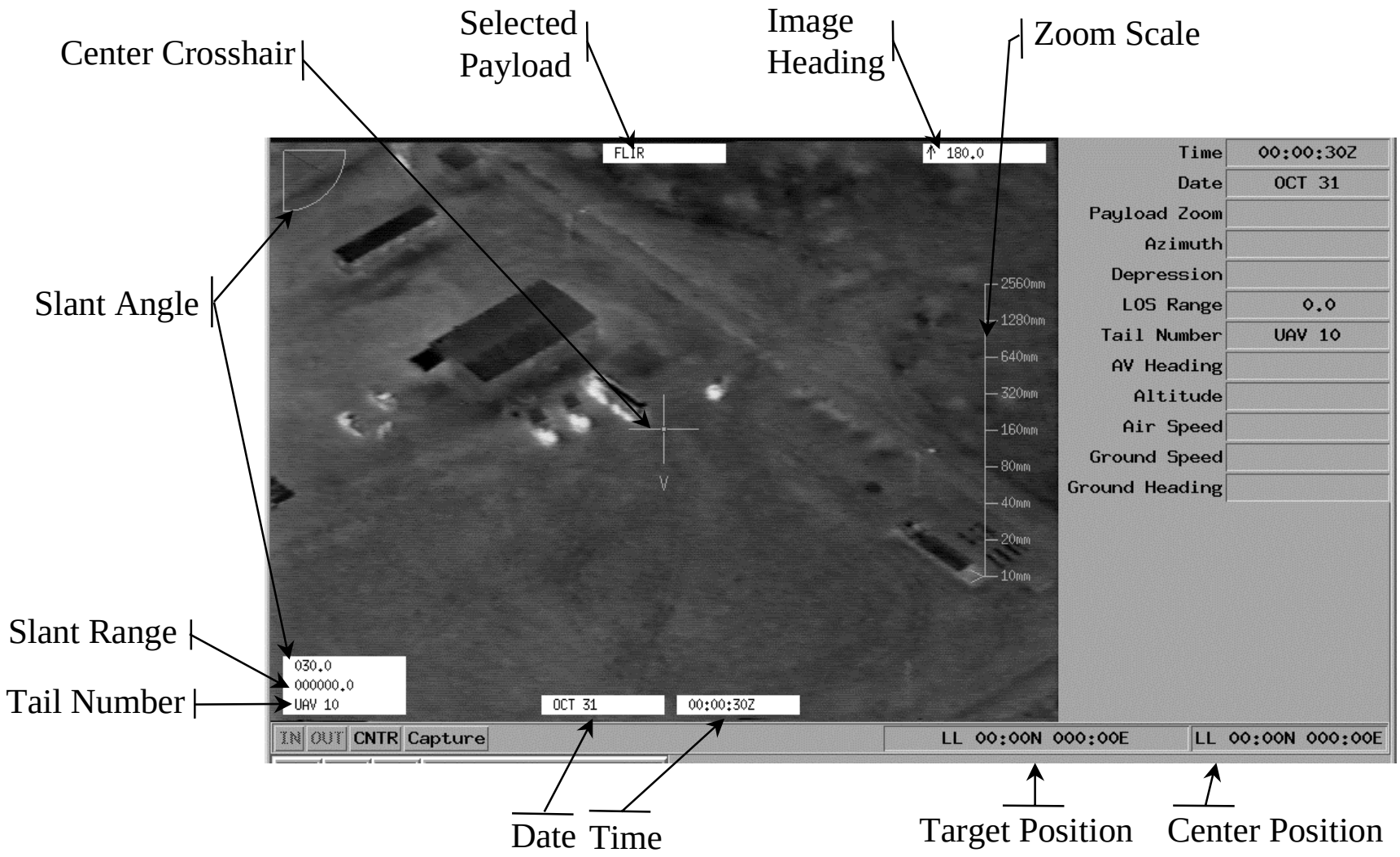
Functional Breakout

- Broken into three functional areas
  - EO/IR video display
  - NITF capture
  - EO/IR Payload controls
- Functions can be presented in a single HCI window as required by a given role

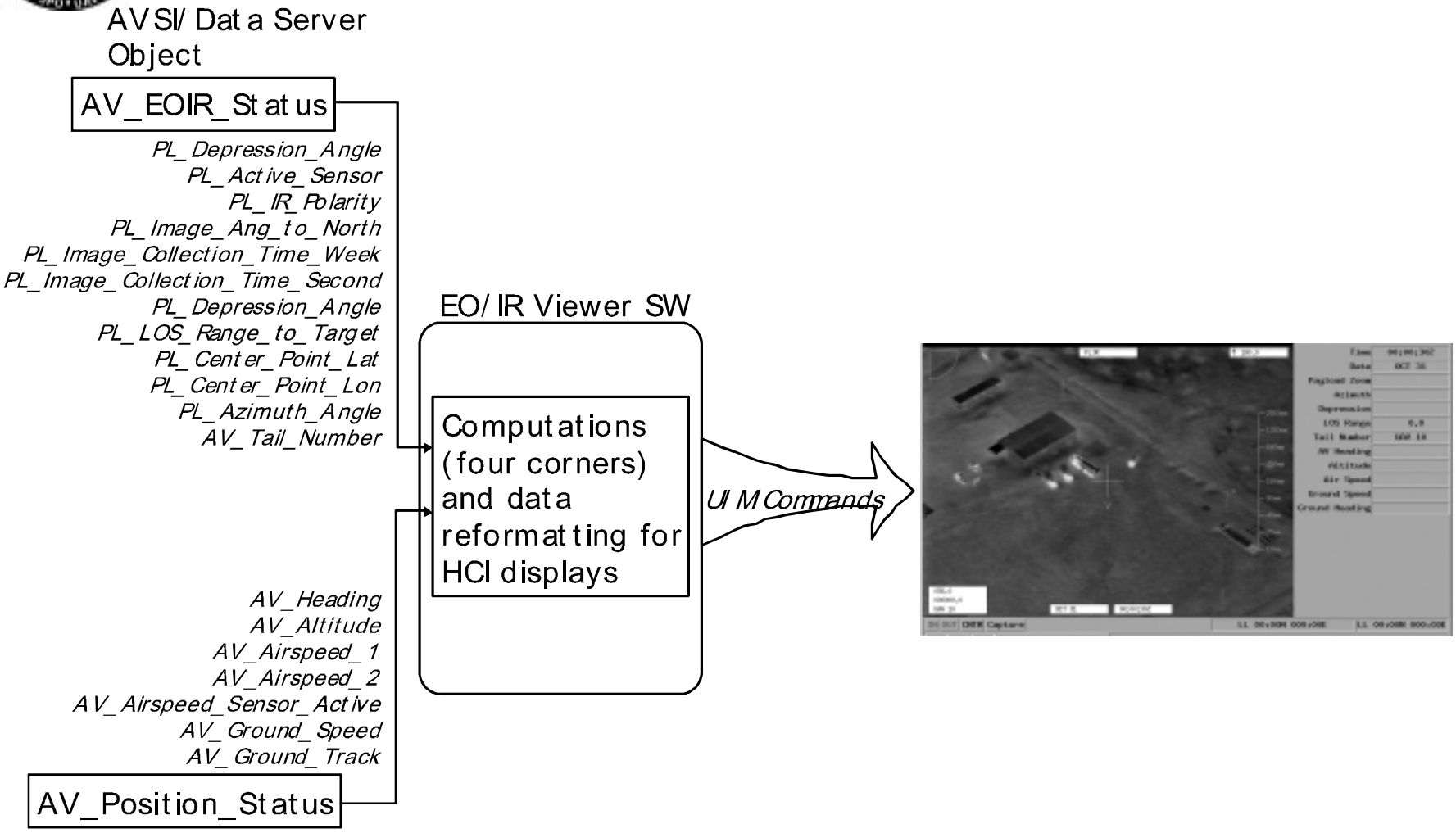
EO/IR Video Display

- Operator's view of what the payload is seeing
- Video is displayed at 30 frames per second
- Video overlayed with core status data
- Additional support status data displayed off of the video

EO/IR Video Display HCI



Data Flow (EO/IR Video)



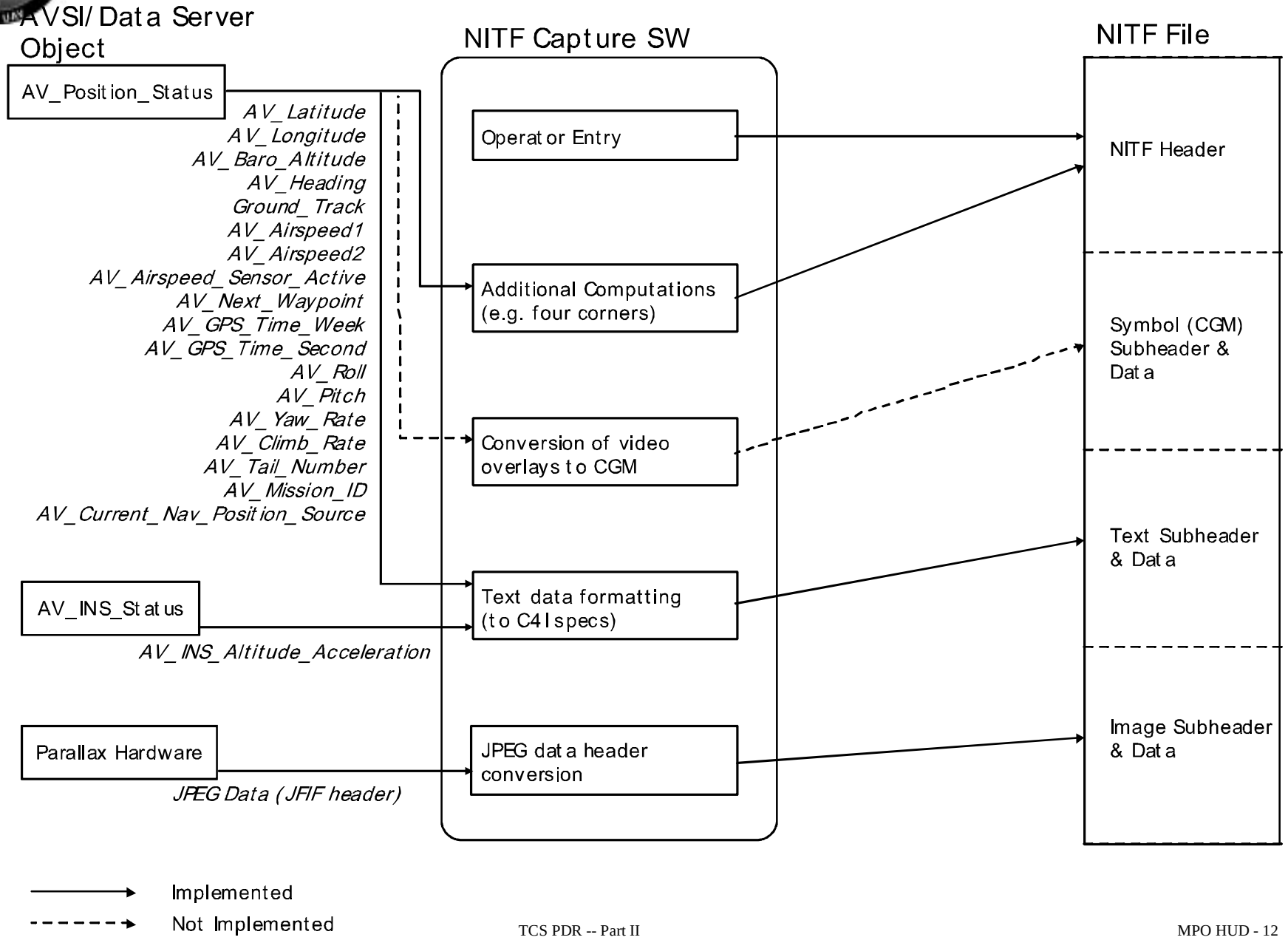
Operation (EO/IR Video)

- Store status data as it arrives.
- Set internal flags that tell which AV/Payload status data items have changed since last update
- For each update of status data, determine what items changed and redraw the appropriate graphics.

NITF Capture

- One step operator process
- AV telemetry data embedded automatically
- NITF header information computed and embedded automatically

Data Flow (NITF Capture)



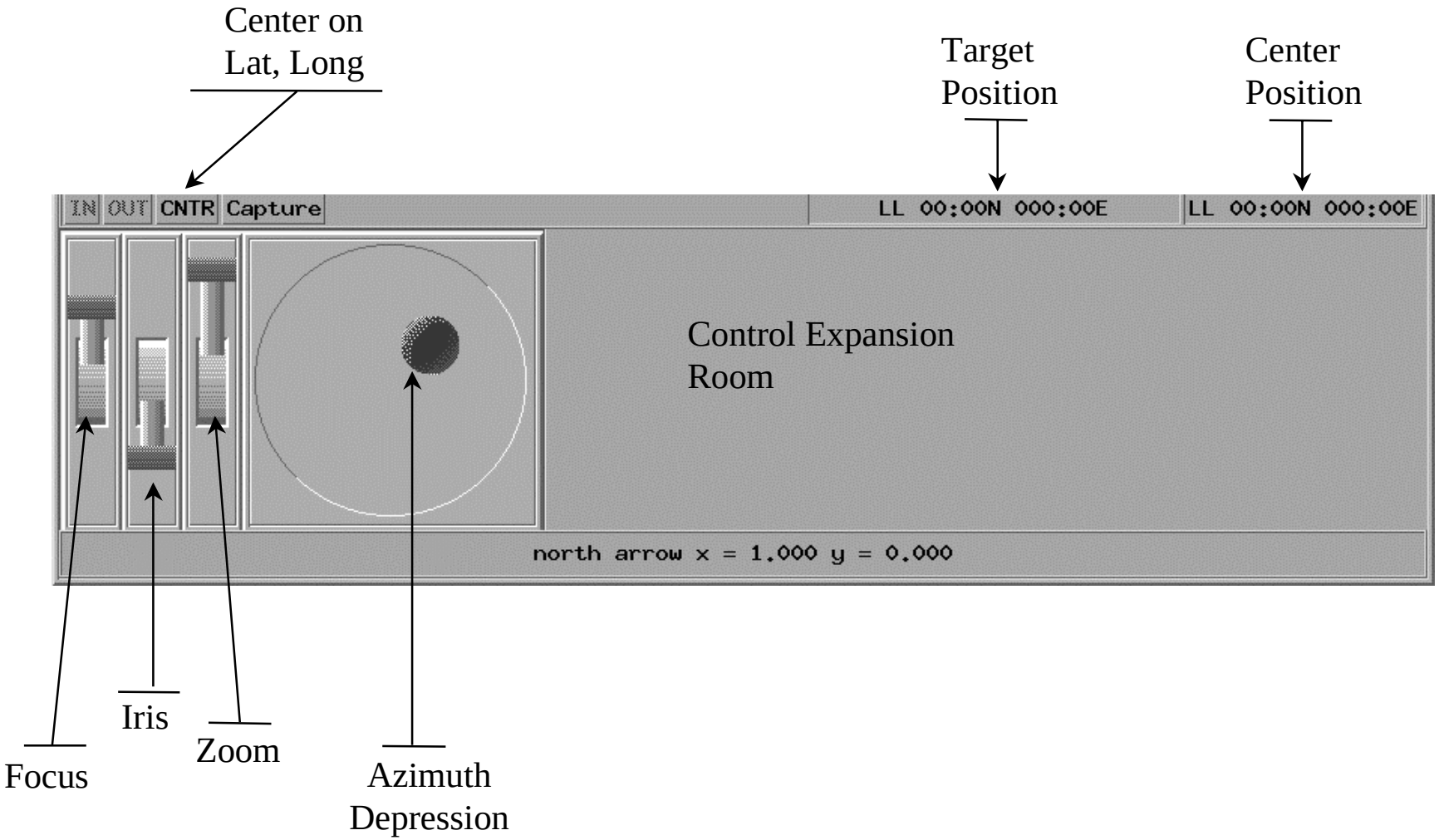
Operation (NITF Capture)

- Compute/format NITF header information (4 corners, date, etc)
- Capture image data from Parallax H/W
- Format JPEG header for NITF compliance
- Format AV telemetry as text data
- Format video overlays as CGM
- Create blank NITF file
- Insert header data, image, text, and CGM symbols into NITF file

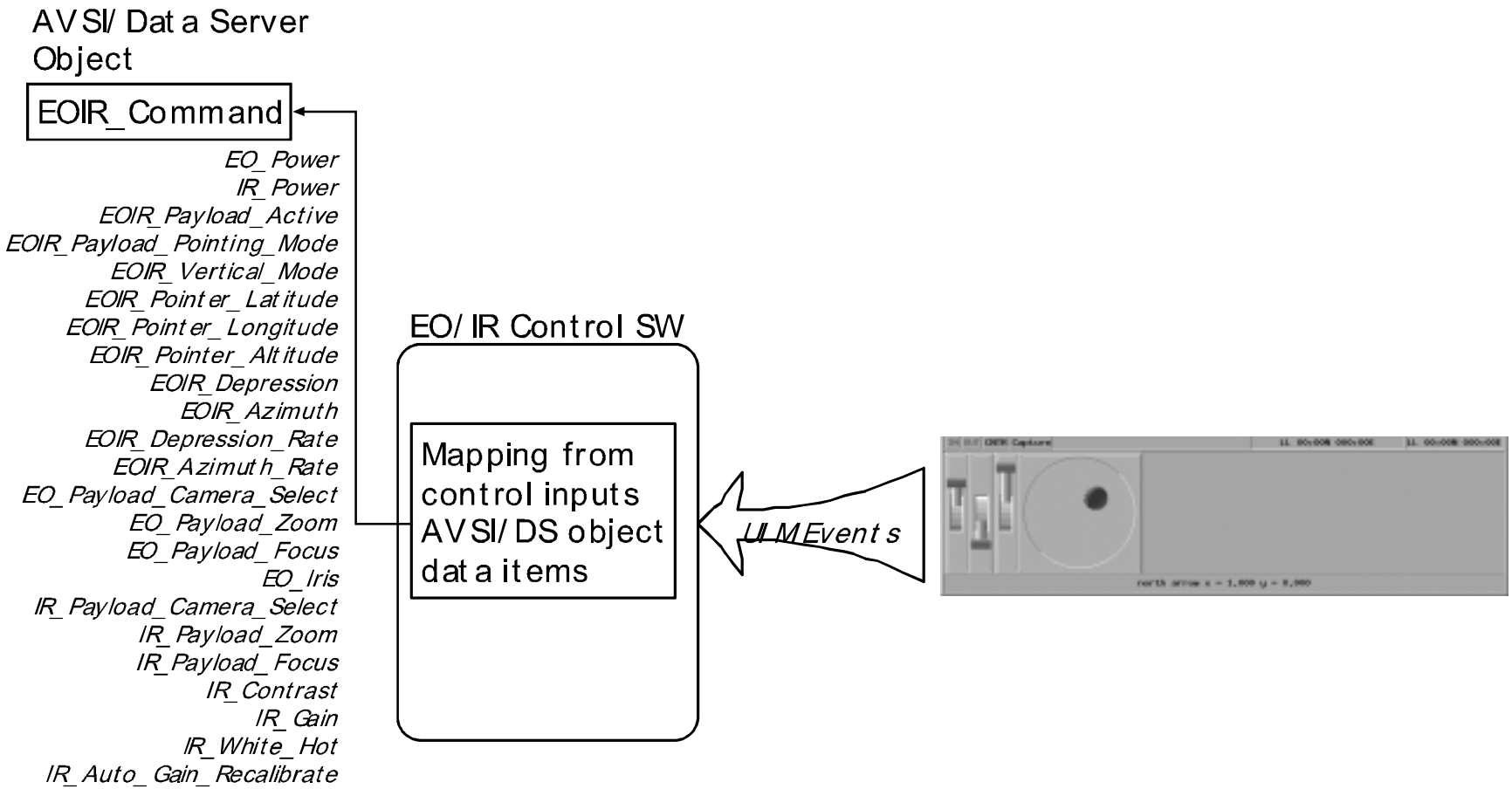
EO/IR Payload Controls

- Mix of graphical and textual based controls
  - standard GUI controls (buttons, text entry, etc)
  - graphical controls (joysticks, sliders)
  - operations on live video
- Used in conjunction with payload video display

EO/IR Payload Controls HCI



Data Flow (EO/IR Payload Controls)



Operation (EO/IR Payload Controls)

- Receive events from window system as operator manipulates controls
  - For a continuous control, such as a slider, sample the state of the controls periodically, and format the appropriate Data Server objects
  - For a discrete control, such as a button, determine the state of the control and immediately format the appropriate DS objects
- Forward Data Server objects to AVSI

Combining Functionality for Different Roles

- CSC:
  - Reads role from DS object
  - Looks up required functionality for role
  - Creates required DS and UIM objects
- UIM:
  - Uses predetermined combination data to combine UIM objects into a single window

Combined Controls for MPO Role